

## Claims

1. A plasma generation system comprising a high voltage generator (20) connected to at least two electrodes (26, 28),  
5 one having a large radius of curvature while the other has a small radius of curvature, characterized in that said high voltage generator is controlled in such a way as to maintain constant the average frequency of occurrence of current discharges from the at least one electrode with a small radius  
10 of curvature (26) to the at least one electrode with a large radius of curvature (28).
2. The plasma generation system as claimed in claim 1, characterized in that said electrode with a large radius of  
15 curvature has a plane geometry.
3. The plasma generation system as claimed in claim 1 or claim 2, characterized in that it additionally comprises a dielectric insulator (30) inserted between the electrodes and  
20 in that said high voltage generator is a sinusoidal or pulsed alternating generator (20).
4. The plasma generation system as claimed in claim 3, characterized in that said high voltage generator comprises a  
25 high gain transformer (40) driven by a transistor (42) operating in switching mode under the control of a low voltage signal generator (46) having a specified fixed frequency and a variable mark-space ratio.
- 30 5. The plasma generation system as claimed in claim 1, characterized in that it additionally comprises a resistance (48) connected between an earth potential and the at least one electrode with a large radius of curvature, to measure a voltage representing the current discharges from the at least  
35 one electrode with a small radius of curvature to the at least one electrode with a large radius of curvature.
6. The plasma generation system as claimed in claim 1,

characterized in that it additionally comprises a current transformer (92) connected in the electrical circuit (22) supplying the electrodes, to measure a current representing the current discharges from the at least one electrode with a small radius of curvature to the at least one electrode with a large radius of curvature.

7. The plasma generation system as claimed in claim 5 or 6, characterized in that it additionally comprises a high pass or band pass filter (50), so that only the part of said measured signal (74) representing the discharges occurring between the electrodes is recovered.

8. The plasma generation system as claimed in claim 7, characterized in that the measured and filtered signal (76) is converted by a conversion system (34), during a specified fixed period, into a specified continuous voltage (82) representing a mean number of electrical discharges.

9. The plasma generation system as claimed in claim 8, characterized in that said measured mean number of discharges is maintained by a control system (36) at a specified set value (38, 80) corresponding to said mean frequency of occurrence of the current discharges.

10. The plasma generation system as claimed in claim 3, characterized in that said high voltage generator comprises a high voltage chopper (98) distributing, alternately, a positive continuous high voltage and a negative continuous high voltage to the at least one electrode with a small radius of curvature (26) under the control of a low voltage signal generator (46) with a specified fixed frequency and a variable mark-space ratio.

11. The plasma generation system as claimed in claim 1 or claim 2, characterized in that the high voltage generator is a continuous generator.

12. The plasma generation system as claimed in claim 11,  
characterized in that said high voltage generator comprises a  
rectifier circuit (96) connected to the output of a high gain  
transformer (40) driven by a transistor (42) operating in  
5 switching mode under the control of a low voltage signal  
generator (46) having a specified fixed frequency and a  
variable mark-space ratio.

13. A system for plasma sterilization in the presence of  
10 moisture, at atmospheric pressure and at ambient temperature,  
comprising a plasma generation system as claimed in any one of  
claims 1 to 12.